

REMARKS/ARGUMENTS

Claims 1-14 and 28-29 are pending. Reconsideration is respectfully requested.

1. Rejection of Claims 1-2, 4-8 and 28 Under § 103(a)

Claims 1-2, 4-8 and 28 stand rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 6,420,753 (Hoang) in view of US Patent 5,021,848 (Chiu). The Applicants respectfully traverse this rejection.

To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974); MPEP 2143.03. The Applicants respectfully submit that the combination of Hoang and Chiu fail to teach or suggest all the limitations of claim 1. Specifically, claim 1 recites, inter alia, an insulating layer of material *initially formed as a continuous layer of material* having a first portion disposed between the control gate and the floating gate in the memory area, and a second portion disposed between the poly gate and the substrate in the peripheral area, where the first portion has a thickness permitting Fowler-Nordheim tunneling and the second portion has a thickness greater than that of the first portion.

Neither Hoang or Chiu teach or suggest a memory device with the claimed insulating layer of material. Instead, Hoang teaches forming an additional layer of insulating material 202 in the peripheral area, instead of varying the thickness of layer 206 that extends between the control and floating gates (see Fig. 6). And, Chiu teaches an insulating layer 40 or 41 between the control and floating gates that is separate from the insulating layer 21 used in the peripheral area. Therefore, it is respectfully submitted that Hoang and Chiu cannot form a proper basis for finding claim 1 obvious.

On page 3 of the final office action, the Examiner admits that Hoang fails to explicitly show “the insulating layer” being initially formed as a continuous layer of material, but concludes:

“the fact that the insulating layer is not initially formed as a continuous layer does not change the operation of the device nor does it change the final structure of the device that is being claimed.”

The Applicants respectfully disagree. A structure with a continuously formed layer of material having portions of different thicknesses is in fact structurally different from two separate and distinct layers of materials formed adjacent each other. Moreover, this claim covers the structure of the device, not its operation.

On page 4 of the final office action, the Examiner concludes that it would have been obvious to modify Hoang with layer 21 of Chiu to render claim 1 obvious, based on the conclusion that:

“Chiu is cited for showing a continuous insulating layer 21 having a first portion disposed between the control gate and the floating gate and a second portion disposed between the poly gate and the substrate and having a thickness that is great than that of the first portion of the insulating layer.”

The Applicants respectfully traverse this conclusion. In particular, it is layer 40 or 41 of Chiu that is disposed between the control and floating gates, not layer 21 (see Figs. 1B, 11A, 12B and 18A). Moreover, layer 40 or 41 is formed separately from and after the formation of layer 21 (compare Figs. 9A and 10A). There is no apparent support for the conclusion that layer 21 of Chiu includes a portion that is disposed between the control and floating gates. In fact, layer 21 of Chiu corresponds to layer 202 of Hoang, which merely extends underneath the floating gate in the memory area and the poly gate in the peripheral area. Thus, combining layer 21 of Chiu with the teachings of Hoang does not appear to result in any modification of the Hoang device.

Claims 2, 4-8 and 28 all depend on claim 1, and are therefore deemed allowable for the reasons set forth above. Further, Hoang and Chiu fail to teach elements recited in these dependent claims. For example, even if Chiu layers 21 and 40 or 41 were somehow incorporated in the Hoang device, the thinner layer portion (i.e. layer 40 or 41) does not extend between the substrate and the control gate as recited in claim 8.

It is therefore respectfully submitted that claims 1-2, 4-8 and 28 are not rendered obvious over Hoang in view of Chiu, and that this rejection should be withdrawn.

2. Rejection of Claim 3 Under § 103(a)

Claim 3 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Hoang in view of Chiu and US Patent 6,429,073 (Furuhata). Claim 3 depends upon claim 1, which is deemed allowable for the reasons set forth in Part 1 above. Applicants respectfully submit that Furuata fails to cure the deficiencies of Hoang and Chiu.

3. Rejection of Claims 9-14 and 29 Under § 103(a)

Claims 9-14 and 29 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Hoang in view of Chiu and Furuata. The Applicants respectfully traverse this rejection.

Claim 9 is similar to claim 1, in that it recites an insulating layer initially *formed as a continuous layer* of material having a first portion disposed between the control gate and the floating gate, and a second portion disposed between the poly gate and the substrate, where the first portion has a thickness permitting Fowler-Nordheim tunneling and the second portion has a thickness greater than the first portion. As stated above in Part 1, neither Hoang or Chiu teach such an insulating layer. Moreover, Furuata clearly fails to cure this deficiency. Thus, it is submitted that claim 9 is not rendered obvious over Hoang, Chiu and/or Furuata.

Claims 10-14 and 29 all depend on claim 9, and are therefore deemed allowable for the reasons set forth above. Further, Hoang, Chiu and Furuata fail to teach elements recited in these dependent claims. For example, even if Chiu layers 21 and 40 or 41 were incorporated in the Hoang device, the thinner layer portion (i.e. layer 40 or 41) does not extend between the substrate and the control gate as recited in claim 8.

It is therefore respectfully submitted that claims 9-14 and 29 are not rendered obvious by Hoang, Chiu and/or Furuata, and that this rejection should be withdrawn.



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For the foregoing reasons, it is respectfully submitted that the claims are in an allowable form, and action to that end is respectfully requested.

Respectfully submitted,

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